UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,326	11/18/2003	Thomas W. Stone	10020908-1	8276

7590 07/13/2005

AGILENT TECHNOLOGIES, INC.
Intellectual Property Administration
Legal Department, DL 429
P.O. Box 7599
Loveland, CO 80537-0599

EXAMINER	
KIM, JOANNE H	
ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/717,326	STONE, THOMAS W.	
	Examiner	Art Unit	
	Joanne H. Kim	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 November 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 2, 2005, has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 3-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Amended claims 1, 8 and 14 recite "said holographic mirror has reflection properties different from a conventional mirror." The claims fail to particularly point out how the reflection properties of the holographic mirror are different from a conventional mirror.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3-13, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouevitch (U.S. Patent Publication No. US 2003/0021526).

Regarding claims 1 and 3, Bouevitch discloses a method for compensating for a chromatic dispersion in optical system comprising the steps of: separating input optical radiation into chromatic components; propagating the chromatic components through the optical system by reflecting the chromatic components from a modifying means, such as a switchable pixellated mirrors, and providing a pre-selected relationship between optical path lengths of the chromatic components, the pre-selected relationship compensating the chromatic dispersion; and recombining the chromatic components after propagating through the optical system (paragraphs [0003], [0061] and [0086]). Bouevitch discloses that the modifying means may include mirrors or any optical element capable of modifying a property of at least a portion of a beam of light and reflecting the modified beam of light (paragraph [0075]).

Bouevitch does not specifically disclose reflecting the chromatic components from a holographic mirror having reflection properties different from a conventional mirror.

MPEP section 2183 states that "if a prior art element performs the function specified in the claim, and produces substantially the same results as the corresponding element disclosed in the specification, the prior art element is an equivalent. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 54 USPQ2d 1308 (Fed. Cir. 2000)." In this instant, the mirror of Bouevitch performs the function specified in the claim, which is reflecting the distinct chromatic components and providing a pre-selected relationship between the optical path lengths of the chromatic components, and produces substantially the same results, which is compensating chromatic dispersion.

Accordingly, It would have been obvious to one of ordinary skill in the art to substitute a holographic mirror for the mirror of Bouevitch to reflect the chromatic components and provide a pre-selected relationship between optical path lengths since these two are equivalents.

Regarding claims 4-7, Bouevitch discloses that the method further comprises the steps of: focusing the input optical radiation; propagating the input optical radiation through at least one separating diffraction grating; and propagating the chromatic components through at least one recombining diffraction grating (Fig. 1b; and paragraphs [0061] and [0102]). Further, Bouevitch discloses that the at least one recombining diffraction grating is the same as the at least one separating diffraction grating (Fig. 1b; and paragraph [0061]).

Regarding claims 8 and 11, Bouevitch discloses a chromatic dispersion compensated optical system comprising: an optical separating sub-system (120) capable of separating input optical radiation into chromatic components; an optical

recombining sub-system (120) capable of recombining the chromatic components for output; and an optical reflector, such as a pixellated switchable mirrors, capable of reflecting the chromatic components and providing a pre-selected relationship between optical path lengths through the optical systems of the chromatic components, the pre-selected relationship compensating chromatic dispersion, the optical reflector being optically disposed between the optical separating sub-system and the optical recombining sub-system (Fig. 1b; and paragraphs [0003] and [0061]).

Bouevitch does not specifically disclose that the optical reflector is a volume holographic mirror having reflection properties different from a conventional mirror.

As discussed above, according to MPEP section 2183, the optical reflector of Bouevitch is an equivalent of the volume holographic mirror recited in the claim since the optical reflector performs the function specified in the claim (i.e., reflecting a chromatic components and providing a pre-selected relationship between optical path lengths) and produces substantially the same results (i.e., compensating chromatic dispersion) as the corresponding element disclosed in the specification.

Accordingly, it would have been obvious to one of ordinary skill in the art to substitute a volume holographic mirror for the optical reflector of Bouevitch to reflect the chromatic components and provide a pre-selected relationship between optical path lengths since these two are equivalents.

Regarding claims 9, 10, 12, 13, 18, and 21, Bouevitch discloses that the optical system further comprises a switchable liquid crystal array (130 and 527) interposed between the reflector and the optical recombining sub-system (paragraph [0085]), an

optical focusing component (990) capable of focusing separated input optical radiation onto the volume optical reflector, a directing optical element (110b) capable of directing the separated input optical radiation to the optical reflector, and a redirecting optical element capable of redirecting optical radiation reflected from the optical reflector to the switchable element (144 and 146) (Figs. 1b, 3a, 3b, 5a, and 9). Further, Bouevitch discloses that the optical recombining sub-system is the same as the optical separating sub-system (Fig. 1b; and paragraph [0061]) and the volume optical reflector comprises a phase conjugate mirror (610 in Fig. 6a).

6. Claims 14-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouevitch in view of Shirasaki et al. (U.S. Patent Publication No. US 2002/0114090, herein after "Shirasaki").

Regarding claims 14, 15,19, and 20, Bouevitch discloses a chromatic dispersion compensated optical system comprising: a separating diffraction grating (120) capable of separating input optical radiation into chromatic components; a recombining diffraction grating (120) capable of recombining the chromatic components; an optical reflector (526 and 552) capable of reflecting the chromatic components and providing a pre-selected relationship between optical path lengths through the optical systems of the chromatic components, the pre-selected relationship compensating chromatic dispersion; and a switchable element (527), such as a switchable liquid crystal array, capable of receiving the separated chromatic components and outputting separating

output chromatic components interposed between the optical reflector and the recombining diffraction grating (Figs. 1b, 5a and 5b; and paragraph [0061]).

As discussed above, Bouevitch does not specifically disclose that the optical reflector is a holographic mirror having reflection properties different from a conventional mirror, however, it would have been obvious to one of ordinary skill in the art to substitute a holographic mirror for the optical reflector of Bouevitch to reflect the chromatic components and provide a pre-selected relationship between optical path lengths since these two are equivalents.

Further, Bouevitch does not disclose that the optical system comprises a pair of separating diffraction gratings and a pair of recombining diffraction gratings.

Shirasaki discloses a spatial grating pair arrangement including a pair of separating diffraction gratings (68 and 71) used to compensate for chromatic dispersion (Fig. 6; and paragraph [0015]).

It would have been obvious to modify Bouevitch to include a pair of separating diffraction gratings such as that taught by Shirasaki.

The motivation would have been to provide additional compensation for chromatic dispersion.

Additionally, since the separating diffraction grating is the same as the recombining diffraction grating in Bouevitch, the combination of Bouevitch and Shirasaki also discloses that the optical system comprises a pair of the recombining diffraction gratings.

Regarding claims 16 and 17, Bouevitch discloses that the optical system further comprises an optical focusing component (990 in Fig. 9) capable of focusing separated input optical radiation onto the volume optical reflector and that the recombining diffraction grating is the same as the separating diffraction grating (Fig. 1b; and paragraph [0061]).

Response to Arguments

7. Applicant's arguments filed April 2, 2005, have been fully considered but they are not persuasive for the reasons stated above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joanne H. Kim whose telephone number is (571) 272-2139. The examiner can normally be reached on 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joanne H. Kim
Examiner
Art Unit 2883

jhk/FGF

Frank G. Font
Supervisory Patent Examiner
Technology Center 2800